Amendments to the Drawings

Attached is a sheets of replacement drawing to correct the transmission damaged Figure 5E.

Attachment: Replacement Sheet for Figure 5E

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Remarks/Arguments

Applicant appreciates the helpful feedback received from Examiner Mohr in the
"Detailed Action" Office communication mailed November 2, 2007.

Specification

I. Title

We agree with Examiner Mohr's suggestion. In this amendment, the new title suggested
by Examiner Mohr replaces the old title.

II. Abstract

The abstract is amended to
- In narrative form;
- Limited to a single paragraph;
- Within the range of 50 to 150 words;
- Not repeating information given in the title;

III. Disclosure

Page 2 lines 49-51 and page 7 line 189 are amended to fix the informalities objected by
Examiner Mohr.

IV. Drawings

A replacement drawing is provided to correct the transmission damaged Figure 5E.

Claim Rejections – 35 USC §112

Claims 2 and 3 are cancelled. Claims 7, and 8 are amended. The applicant respectfully
submits that the amended claims are now with definitive descriptions in line with
Examiner Mohr's interpretation.

Claim Rejections – 35 USC §102

Claims 1 to 5 and 13 are cancelled. Claims 6 to 8 and claims 11 and 12 are amended to
overcome Examiner Mohr's rejections.

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The detailed arguments for each of the remaining claims are as follows:

Claim 6:

Braspenning discloses an image segmentation method by determining hard border fragments in the digital image and forming segments by determining for each pixel its closest side.

The adaptive image region partition method of the invention creates image region partition adaptively based on the underlying component characteristics. For example, a large component type (such as an "elephant") will have much greater region partition allocation than a small component type (such as a "mouse"). The fact that the region can be adaptively partitioned base on different component types is unique to our invention and it yields great advantage over prior art methods. This adaptive partition is accomplished by applying a distance metric depending on component characteristics.

Braspenning does not disclose neither does he suggest adaptive image region partition method. Recognizing that the previous claim 6 did not describe our unique invention specifically to reflect the patently distinctive difference between our invention and Braspenning, we amended the claim to add limitations based on our unique inventions as follows:

(1) We added "and its associated characteristics for each component" to clarify that component characteristics are essential input to the invention.
(2) We clearly added the adaptive image region partition step "using component characteristics" and "applies a distance metric depending on component characteristics".

The applicant respectfully submits that the amended claim 6 clearly describes our unique invention which is patently distinctively different from Braspenning.

Claim 7:

We added a new step (c) "Extract component characteristics such as component type or size". This clarifies that component characteristics are extracted for use in the adaptive partition.

The applicant respectfully submits that the amended claim 7 clearly describes our unique invention which is patently distinctively different from Braspenning.

Claim 8:

(1) In step (a), we added using "component characteristic".

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(2) In steps (a) and (b), we added the adaptive image "having distance metric depending on component characteristics".

The applicant respectfully submits that the amended claim 8 clearly describes our unique invention which is patently distinctively different from Braspenning.

Claim 11:

Cong discloses a cell image shape extraction. A slow watershed method is used for cell segmentation.

This invention takes advantage of the fast two-pass ZOI creation method using component labeled image for cell segmentation. This is unique and patently different from Cong.

Recognizing that the previous claim 11 did not describe our unique invention specifically to reflect the patently distinctive difference between our invention and Cong, we amended the claim to add limitations based on our unique inventions as follows:

(1) In step (a), we added "component labeled image" as input. This highlights the difference of our invention that takes advantage of the component labeled image for fast partition.
(2) In step (c), we added using "component labeled image" and "a two pass ZOI creation method". This highlights the advantage of using fast two pass ZOI creation method in cell segmentation.
(3) In step (d), we added "cell mask having the same component label in the nuclei mask ZOIs is considered as one cell region". This highlights the component label based approach of the current invention.

The applicant respectfully submits that the amended claim 11 clearly describes our unique invention which is patently distinctively different from Cong.

Claim 12:

Cong does not disclose adaptive cell segmentation. We amended the claim to add limitations based on our unique inventions as follows:

(1) In step (a), we added "component labeled image and component characteristics" as input.

(2) In step (c), we added using "component labeled image and component characteristics".

(3) In step (d), we added "adaptive cell mask having the same component label in the nuclei mask ZOIs is considered as one cell region".

The applicant respectfully submits that the amended claim 12 clearly describes our unique invention, which is patently distinctively different from Cong.

Claim Rejections – 35 USC §103

Claims 9 and 10 are cancelled. Claim 14 is amended.

Gilge teaches an image coding method using orthogonal basis functions. It does not teach adaptively changing metrics depending on cell size. To avoid the confusing of the adaptive adjusting of distance metrics of the current invention versus the "local weighting" of the Gilge, we amended Claim 14 to remove "the weighting factor for the length function" and added "distance transform and averaging cell distance values within a nucleus for distance metric"

The applicant respectfully submits that the amended claim 14 clearly describes our unique invention, which is patently distinctively different from Gilge in view of Cong.

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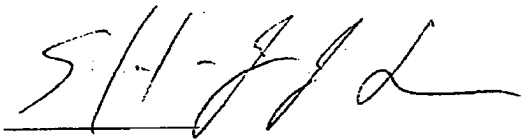
Conclusion

In view of the above remarks and arguments, applicant submits that the amended specifications have overcome the objections. The amended claims are patently over the prior art and all claim rejections under 35 USC §112 and 35 USC §102 and 35 USC §103 are overcome. Therefore applicant submits that this application is in condition for allowance, which action applicant respectfully solicits.

Conditional Request for Constructive Assistance

If for any reason this application is not believed to be in full condition for allowance, Applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to MPEP para. 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,

Shih-Jong J. Lee